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Infectious and Non-infectious Herd Infertility in East Anglia

BY
I. B. MUNRO
Milk Marketing Board, Beccles

THE problem of herd infertility is one of growing importance as costs and production levels rise in our dairy herds. The financial loss resulting from this condition can bring serious consequences to the small farmer, especially with the seasonal variation in milk prices. Nationally, the annual loss from infertility is probably in the region of £18,000,000 per annum, based on the estimates of an N.V.M.A. Committee (1940) and allowing for price changes. In a recent disease survey reported by Ogden (1955), bovine infertility was found to be the most common single disease condition encountered in 58 herds, or 8·3 per cent. of the number of herds in Oxfordshire, and accounted for 22 per cent. of all disease conditions.

Detailed study of the factors associated with herd infertility appears to have followed the successful attack upon contagious abortion by the introduction of Strain 19 vaccine just over 10 years ago. The subsequent report by Lawson & MacKinnon (1952) on the results from 1,302 aborted foetuses sent to Weybridge during the following five years, showed that *Vibrio fetus* was gradually replacing *Brucella abortus* as the major cause of infectious abortion, and that it was probably the most frequent cause of infectious infertility.

With regards to the non-infectious herd infertility problem, Hignett (1950) gave the results of the first survey of 132 herds, covering the nutritional factors, with especial reference to the role of calcium and phosphorus. Wilson (1952) gave a further indication of the importance of mineral nutrition in 16 herds in the South-West of England. More recently Ford (1956) reported on the nutritional and infectious factors encountered in 150 subfertile herds in the East Midlands.

Allowing for the fact that area differences can and do occur in the aetiology of herd infertility, this report is given to provide a rough indication of the various factors associated with 406 herd infertility problems investigated over three years between 1952 and 1955, including the 270 herds previously reported (Milk Marketing Board Reports 1953, 1954). The classification of the factors is not claimed to be fully accurate, owing to the limitations on diagnostic procedures imposed by field conditions. In the majority of herds, investigations into the herd breeding problem were initiated when over half of the herd were returning to first services, and, in the remainder, when persistent infertility existed in a third or more of the herd.

The area in which the investigations were carried out lies on the East Coast, extending to a depth of not more than 40 miles inland, on soil ranging from organic clay loams, light sandy loam, medium loam over gravel, to heavy loam over clay, all tending to be low in phosphate and potash at least. In most of this area the average annual rainfall of 20 inches, is the lowest for the whole of England and Wales. This fact makes grassland production difficult, and the farming is predominantly of the arable type. However, such conditions have favoured the production of winter milk once harvesting operations are completed, the cows being maintained from September to March, mostly on arable crops and their by-products.

Milk production has reached a high peak of efficiency in the area, indicated by the annual average for all breeds of 8,839 lb. per cow for the 45 per cent. of herds which are recorded in the counties of Norfolk, Suffolk and Essex. This is the highest yield for any similar group of three counties in the country. In the herds using A.I. just over 50 per cent. of the inseminations are with Friesian semen. About half of the inseminations in the area are carried out during the three winter months of November, December and January, when the duration of oestrus is at its minimum, and most of the cattle are housed, rendering the detection of oestrus in cows for insemination more difficult than in the summer months.

Artificial insemination was used either entirely or partially for breeding in 366 of the herds, equivalent to

4·8 per cent. of the 7,577 herds using A.I. in the area covered by two cattle breeding Centres, A.I. being used for breeding in 40 to 60 per cent. of the cattle in the three counties concerned. Natural service was used entirely in the remaining 40 herds.

Classification of Aetiological Factors

Table I shows the aetiological classification of herd fertility as it occurred during the three year period in 406 herds. In 274 herds (or 67 per cent.) the breeding was entirely by A.I. In some herds more than one factor appeared to be associated with the reduced breeding efficiency, and in these cases the herd was classified under what was considered the most important factor.

TABLE I

FACTORS ASSOCIATED WITH HERD INFERTILITY

Period	Herds investigated	Non-infectious infertility		Infectious infertility		
		Nutritional	Poor breeding management	Vibriosis	Brucellosis	Other infection
1952–3 ...	87	46	15	13	5	8
1953–4 ...	183	137	14	19	8	5
1954–5 ...	136	83	5	37	6	5
Total ...	406 (100%)	266 (66%)	34 (8%)	69 (17%)	19 (5%)	18 (4%)

Non-Infectious Infertility Associated with Environmental Factors

It will be seen from Table I that in 300 (or 74 per cent.) of the 406 herds, the major cause of infertility appeared to be unrelated to any infectious factor, based on the absence of any indication of inflammatory reactions in the genital tract on a herd basis, and confirmed by negative findings from blood or mucus samples collected from approximately 20 per cent. of the herds. The use of A.I. partially or entirely in 90 per cent. of the herds, involving the use of semen from several bulls in the herds also enabled a check to be made on the possibility of infected or abnormal semen being associated with the herd problem. The non-infectious factors have been included in the following categories.

1. Poor Breeding Management

In 38 herds, representing 11 per cent. of the non-infectious herd problems, or 8 per cent. of the total number of herds investigated, it was considered that poor breeding management factors could account for most of the reduced fertility. These faults included breeding at less than 45 days *post-partum*, and insemination being carried out too early in oestrus.

The problem of optimum time for insemination has been studied separately in one sub-centre area, in relationship to the time taken for the inseminator to reach the farm. A statistically significant difference was found in the herd conception-rates in favour of those herds near to the Centre, as compared with those about 20 miles away, which were not reached until at least midday. However, unless major nutritional factors, affecting the ovarian activity of the herd, were involved, this difference in itself did not appear to result in the development of a herd breeding problem. The herds visited by an inseminator, who had developed an unsatisfactory insemination technique, fell into a similar category, although his results were not the sole cause of herd breeding problems.

2. Apparent Nutritional Factors

In 266 herds (or 66 per cent.) reproductive efficiency appeared to have been depressed by other non-infectious factors. It was indicated in these herds, by the clinical histories and examinations, and by the composition of the rations, that some nutritional factor was interfering with the normal functioning of the reproductive system, especially during the winter period. Nutritional infertility, and even infectious infertility, must be dealt with in the light of the associated environmental conditions if the importance of these factors is to be truly evaluated. It must be appreciated therefore that the results of this investigation only apply to cattle in a similar environment. A description of the general environmental factors in the area has been given in the introduction of this paper.

Low Protein Intake

In about five per cent. of the herds, showing no sign of infection, the protein intake of the herd was considered to be inadequate, although in most cases this accompanied and probably intensified, the effects of a low phosphorus intake.

Mineral Deficiencies

The feeding and soil conditions on the farms investigated tended to result in inadequate or imbalanced mineral intakes and the various deficiencies diagnosed were as follows :—

Phosphorus Deficiency

During the last two years of the investigations details of feeding were obtained, and, of the 220 herds involved in this category, cattle in at least 98 herds were on high CaO and inadequate P_2O_5 intakes, based on the phosphorus requirements given by Hignett & Hignett (1951). Most cases originated from the typical winter foods of sugar beet tops, sugar beet pulp and kale, grown in large quantities on these arable farms. This was confirmed by the existence of subnormal blood inorganic phosphorus levels averaging 4·5 mgs. per cent. (range 2·8 to 7·0), with groups of five to nine animals sampled in 10 out of 17 herds. Hay and fresh herbage samples from the area have also shown low phosphorus contents. The use of sterilised bone

flour at a rate of 4 oz. per head per day to balance the maintenance rations has been advised in herds under the above feeding conditions.

Copper Deficiency

Subnormal blood copper levels ranging from 0·03 to 0·06 mg. per 100 ml. were found in animals in 11 out of 25 herds sampled. In eight herds these levels were restricted to maiden heifers dependent on fodder grown on soil over gravel or sand. The heifers showed a high incidence of anoestrus or suboestrus as well as returns to service. Changes in the skin texture, the coat colour and unthriftiness were present in animals in some of the herds.

During 1955 facilities for fresh herbage analysis became available, and samples were taken from eight herds in which the infertility problem tended to persist while the animals were at grass in the summer, as well as during the winter. An unsatisfactory response to phosphorus supplements was obtained in five of the herds previously on a low phosphorus intake. Low herbage copper levels ranging from 4·5 to 7 p.p.m. Cu. were found in seven out of the eight samples, while low blood copper levels had been found in two out of six of the herds which had been blood sampled. On one farm, copper deficiency in both stock and crops followed the use of excessive amounts of lime on a sandy loam.

Copper supplementation, with 1 to 2 g. copper sulphate daily for three months each year, prevented the occurrence of anoestrus or suboestrus in both cows and maiden heifers and also improved fertility, especially with the maiden heifers, as would be expected from the blood sampling results. In four herds from which accurate breeding records were available the conception rates, based on non-returns to either the first or second inseminations, the second no later than one cycle from the first, showed a rise from 52 per cent. with 31 heifers in the year prior to treatment, to 95 per cent. with 21 heifers in the year following. The corresponding rates for cows were 72 per cent. with 86 animals and 68 per cent. with 62 animals respectively. In one other herd the heifer rate rose from 25 per cent. to 100 per cent., with four animals in the year of testing and three animals in the year following with no treatment, indicating that seasonal factors should also be taken into account in the interpretation of results. The poor cow fertility on this farm, however, is showing some response to manganese treatment, as herbage levels were low for this trace element as well as for copper, the farm being on sandy soil.

Manganese Deficiency

In the same eight samples of herbage, manganese levels ranged from 10·7 to 64·8 p.p.m. Mn. In two herds associated with herbage levels of 11 and 26 p.p.m. Mn, the response to manganese was identical and the conception-rate to either the first or second inseminations was raised from 48 per cent. with 75 cows to 72 per cent. with 74 cows for the year prior to supplementation, and the year following, respectively. In the first herd 1 oz. of manganese sulphate was given in the food once weekly, and in the second the intake of mineral mixture containing manganese was increased. In another herd, associated with a herbage level of 28 p.p.m. Mn, manganese supplementation of four cows resulted in a conception-rate of 75 per cent. compared with 43 per cent. for seven other cows over the same period, based on first or second services within 25 days of the first.

It would appear from these results that this deficiency had more effect on cow fertility levels than that occurring on copper-deficient farms. Supplemented heifers on the first farm mentioned showed a rise in conception-rate from 25 per cent. to 100 per cent. with four and five animals respectively. Prior to this the heifers on this farm had shown depigmentation of the coat, and anoestrus. The herd conception-rates on this farm were at 44 per cent. and 40 per cent. for the years following the application of lime to pasture at 2 tons per acre, in spite of normal soil *p*H levels beforehand, probably resulting in a depressed manganese uptake by the herbage, as noted by Mitchell (1954).

Weak fetlock joints in newly-born calves, as found by Bentley & Phillips (1951), occurred on another of the farms with a herbage level of 16 p.p.m. Mn, and pica, mainly expressed by the eating of bark from trees or fences, was noticed on this farm and on one of the other low manganese farms. Details of the association of this latter symptom with low phosphorus intakes have been reported by the author previously (Milk Marketing Board, 1954).

It will be realised that, in herds affected with either manganese or copper deficiencies, the levels of manganese or copper included in most standard commercial mineral mixtures are not adequate to correct these deficiencies.

Combined Non-Infectious and Infectious Factors

In at least 27 out of the 88 herds with infectious conditions nutritional deficiencies were also considered to exist, and in 52 out of the 266 herds with nutritional deficiencies, poor breeding management was also present.

Duration of Infertility

In at least 25 herds, or about six per cent., herd infertility persisted for two years or more. The effect of low phosphorus intake was not always evident in successive winter breeding seasons, but the infertility persisted in herds with low copper or manganese intakes, or low-grade *Brucella abortus* infection, until the introduction of control measures. *Vibrio fetus* infection presented the typical picture of temporary herd infertility in adult stock, although in two herds with low phosphorus intakes the duration was longer.

Infectious Infertility

In 106 or 26 per cent. of the 406 herds genital infection appeared to be the major factor associated with herd infertility, with fibriosis and brucellosis accounting for most outbreaks.

Vibriosis

The investigation revealed that vibriosis was by far the most widespread cause of infectious herd infertility, accounting for about 65 per cent. of the infectious conditions, and 17 per cent. of the herd problems. The annual number of herds in which the infection was diagnosed increased during the period of investigation.

* For Correction See p. 703

It was associated with a herd infertility problem in 62 or 48 per cent. of the 129 herds investigated, in which natural service was used wholly or partially for breeding, and of which 116 were mucus tested. Those herds made up 89 per cent. of the 69 positive or suspicious herds. Mucus sampling was only carried out when the breeding history and the clinical signs suggested the presence of a venereal infection.

A herd was classed as "positive" when one or more samples from the groups tested gave complete agglutination with two strains of antigen at dilutions of 1 in 60 or above, and "suspicious" when one or more samples showed any agglutination at dilutions below 1 in 60.

the following analysis of the number of inseminations required to established normal pregnancy in one of the herds :—

11 positive reactors	required	3·6	services per pregnancy
6 indefinite	"	3·0	"
12 negative	"	2·4	"

Transmission of infection in at least two herds appeared to follow inseminations with semen from a bull which yielded *Br. abortus* on culture, before the development of significant blood titres. The same circumstances applied to a bull used for natural service in another herd. The possibility is thus raised of infertility resulting from the use of such bulls in vaccinated herds, suggested by the report by Kerr (1955)

TABLE II

Vibrio fetus MUCUS REACTIONS IN TESTED HERDS

Herd status	Number of herds	Total number of samples	Positive	Suspicious	Negative
Positive	55	444	132 (30%)	68 (15%)	244 (55%)
Suspicious	14	95	—	21 (22%)	74 (78%)
Negative	99	869	—	—	869
Totals	168	1,408	132 (9%)	89 (6%)	1,187 (85%)

The incidence of positive, suspicious and negative results out of 1,408 mucus samples from 168 herds, is shown in Table II. A considerable variation was found, however, in individual herds in the proportions of samples showing reactions, the higher proportions of reactors usually occurring in recently infected herds. This variation has been noted previously by the author (1955) and by other workers, including Terpstra (1953).

The reliability of the test was shown by check sampling of highly fertile herds comprising eight herds using natural service with calving indexes of 358 to 387 days, and six herds using A.I. with an average conception-rate of 86·7 per cent. based on non-returns to the first or second inseminations within 25 days of the first. Only one out of 82 samples gave a reaction, this being positive. In an analysis of 62 cows giving positive reactions, 57 had a history of infertility, and the same applied to 33 out of 40 suspicious reactors.

Brucellosis

Animals with *Br. abortus* infection were found associated with herd infertility problems in 19 herds, representing about five per cent. of the herds investigated, and 18 per cent. of the herd infections, and this infection was therefore second in importance to *V. fetus*. Diagnosis was based on the results of blood agglutination tests on groups of animals in each herd, and as only 27 such herds were examined in this way, the incidence might have been higher. The herd history was only typical of a Brucella infection in six of the herds, which experienced more than two abortions. One or two abortions were the only indication of infection in a further six herds, otherwise regular or delayed returns to service alone existed in the remaining seven herds. Indications of *V. fetus* infection were found in two out of 17 of the above herds which were mucus sampled.

The typical association of infertility with animals showing high blood titres in the agglutination test, unrelated to normal vaccination titres, can be seen in of a barrier existing in the uterus and vagina to circulating *Br. abortus* antibodies.

Other Infectious Conditions

Eighteen herds or 4 per cent. of the problem herds were included in this group. Three herds were affected with an acute purulent vaginitis from which the infectious agent could not be isolated on bacteriological examination. One herd had an enzootic *Corynebacterium pyogenes* infection, and in another, the infertility followed a debilitating outbreak of parasitic bronchitis. In the remaining 13 herds tests were negative for pathogenic organisms, including tests for *Trichomonas foetus* in five herds and pleuro-pneumonia-like organisms in three herds, in spite of the existence of abortion or other inflammatory changes in the genital tracts.

Discussion

It should be appreciated in assessing the results of this investigation that A.I. was being used partially or wholly in 90 per cent. of the herds, and that the factors associated with infertility may have been influenced by these circumstances. Although the 366 herds, or 4·8 per cent., using A.I. did not represent all the herds with a herd infertility problem during the three year period, this figure indicates a higher incidence of such herds than that of less than 1 per cent., reported by Wilson (1952) in A.I. herds in part of the South West of England. Webster (1939) in New Zealand, found a comparable incidence of 3·5 per cent. infertile herds in his excellent survey of 573 herds.

The results tend to indicate that certain environmental factors, singly or in combination, play a major part in producing the high incidence of herd infertility. The depressing effect of high milk-yields on fertility has recently been reported by both Carman (1955) in the U.S.A., and Rottenstein and Andersen (1955) in Denmark, based on studies of individual cow records.

The findings from the survey suggest that much of the reduced fertility may be due to the failure to maintain an adequate balance or level of certain minerals in order to ensure the normal functioning of the reproductive system.

Hignett & Hignett (1952) indicated from their observations on the ovarian activity and sexual behaviour of heifers, maintained on different levels of phosphorus intake, the possibility of nutritional deficiency in a herd resulting in lower fertility with A.I. than would occur with natural service. They found that 11 out of 17 heifers, on receiving less than 50 g. of P_2O_5 per day, showed either anoestrus, suboestrus, or irregular dioestral periods, making it very difficult to determine the occurrence of true oestrus, without the use of a vasectomised bull. This disturbance of ovarian activity was found in many of the herds on low phosphorus intakes included in this survey. In addition, the association of low copper and low manganese intakes with anoestrus or suboestrus in maiden heifers was also observed.

The serious loss of breeding time and the consequences of insemination in the luteal phase, resulting from the above disturbances in herds using A.I., indicates the pressing need to evaluate and rectify the mineral intake of our dairy cattle under intensive grassland production, or winter feeding conditions. The mineral intake obviously varies with the feeding practices in each herd and area as does the mineral content of herbage grown on different types and conditions of soil.

It might be said that the blood-values quoted as subnormal, for both inorganic phosphorus and copper, cannot be really regarded as such. However, these values are based on the clinical evidence of depressed reproductive activity, which did not always accompany the usual clinical signs of these deficiencies, on which the interpretation of blood analysis results has been based in the past. Blakemore & Venn (1950) noted the occurrence of infertility in three herds in East Anglia with hypocupraemia accompanying other clinical signs, although they did not find reduced copper levels in herbage samples.

The relationship of low manganese intakes to infertility has been previously noted by Hignett (1941), Bently & Phillips (1951) in the U.S.A. and Swart (1954) in Holland, although its association with a herbage Mn level of 28 p.p.m. is higher than the critical levels of 26 and 20 p.p.m. respectively, reported by the first two authors.

V. fetus was shown to be the major cause of infection, especially in the herds using natural service. If one takes into account only the 168 herds which were mucus-tested the incidence is similar to that of 40 per cent. found in 105 herds by Boyd (1955) in Sweden, and to the national figure of about 30 per cent. reported by Lawson (1956) in this country. More extensive sampling, as also in the case of *Br. abortus* infection, might have revealed a higher incidence of infected herds.

Summary

The results are given of investigations into the aetiology of herd infertility in 406 dairy herds, A.I. being used wholly or partially in 366 of them. The latter herds represented 4.8 per cent. of the herds using A.I. during a three-year period. Environmental factors were associated with 74 per cent. of the herds, and infectious factors with the remaining 26 per cent. The former comprised poor breeding management in 8 per cent. and nutritional factors in 66 per cent., including low phosphorus intake in about 30 per cent. and low blood-copper levels in about 2 per cent. The association of high milk-yields, winter feeding, and winter breeding with infertility is discussed. *Vibrio fetus* infection was involved in 17 per cent., and details are given of the mucus agglutination tests on 168 of the herds. *Brucella abortus* infection associated with herd infertility was found in 5 per cent., and other infectious factors in a further 4 per cent. of the herds.

Acknowledgments.—I wish to express my thanks to Mr. G. F. Smith for encouragement and assistance in these investigations, to Dr. J. T. Abrams, Dr. R. Allcroft, Mr. H. I. Field, Mr. J. R. Lawson, Mr. I. D. B. Newsam for the examination of diagnostic material and Dr. A. Eden for assistance with the nutritional problems. Tracc element analysis of herbage was kindly carried out by Mr. J. Hyslop of Fisons Research Laboratories.

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EXTENSION OF TB AREA ERADICATION PLAN

Free testing under the bovine tuberculosis area eradication plan is due to start on March 1st in Cornwall, that part of Devon in which it does not already apply, and in the counties of Essex, Bedfordshire, Hertfordshire, Middlesex, and London. Parts of Durham and of the north and west Ridings of Yorkshire will also be brought in as well as other large areas not yet specified.

These areas are part of the biggest development of the area eradication plan to take place since it was introduced in 1950.

Atrophic Myositis in a Dog : the Differentiation of this Disease from Eosinophilic Myositis

BY

J. C. WHITNEY*

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IT is the purpose of this paper to record a case of atrophic myositis in the dog, and to indicate in tabular form the features, compiled from a review of the literature, which differentiate this condition from eosinophilic myositis (Wooldridge, 1934 ; Whitney, 1955 ; Harding & Owen, 1956).

Case History

A six-year-old mongrel dog was noticed by its owner to be unable to eat solid food, or, indeed, to open its jaws. This state of affairs, accompanied by progressive wasting of the temporal muscles, had persisted for one month when the dog was presented for examination. The head had a characteristic skull-like appearance (Fig. 1) from the prominence of the zygomatic ridge and the nuchal crest, due to the wasting of the temporal muscles, contrasting strongly with the good condition of the rest of the body.

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The temporal muscles were virtually not palpable, while the orbicularis and auricular muscles were normal. Cutaneous sensation over the affected muscles was normal. The eyes were somewhat sunken. The jaws were in a state of trismus : voluntary movement was restricted to about an eighth of an inch, while any attempt to force the jaws apart was resented. The temporo-mandibular joint, examined by palpation and by X-rays, was normal. The mandibular lymph nodes were not enlarged, and a blood examination showed no eosinophilia.

From a consideration of the features indicated in the table, it was concluded that the dog was affected with atrophic myositis.

Treatment with ACTH and antihistaminics had no effect. The dog was fed on nourishing broths and stews, and maintained condition fairly well. Five months after the onset of the disease, there was some relaxation of the jaws, and the dog was able to lap fluids ; after a further five months, the dog was able to eat a little soft food, and two months later still, that is, 12 months

TABLE I

THE CHIEF RESEMBLANCES AND DIFFERENCES BETWEEN ATROPHIC AND EOSINOPHILIC MYOSITIS OF THE TEMPORAL AND MASSETER MUSCLES OF THE DOG

	Atrophic myositis	Eosinophilic myositis
Aetiology	Unknown (? damage to fifth nerve by over-extension of the tempero-mandibular joint: Robin & Brion, 1934)	Unknown (? allergy)
Breed incidence	No particular breed susceptibility	Alsatians most often affected
Onset	Usually no initial acute phase before chronic symptoms: if acute phase occurs, muscles of mastication are enlarged, and acutely painful on palpation	Periodic acute phases of two to three weeks duration, with intermissions. Muscles of mastication enlarged; reports as to pain differ
Symptoms	Dog unable to eat solid food, and drinks by suction from a deep bowl	Unable to eat solid food, drinks by suction. In intermissions, eats and drinks normally
	Trismus	No trismus
	Atrophy of masticatory muscles only	Other muscles may be affected
	No eosinophilia	Eosinophilia (not constant)
	No tonsillitis	Tonsillitis
	Mandibular nodes not enlarged	Mandibular nodes enlarged
	Voluntary movement of jaws negligible, passive movement resisted.	Little voluntary movement. Passive movement restricted
	Persists under general anaesthetic	
Prognosis	A high proportion of cases regress spontaneously from third to sixth month	Bad. Many case histories of two to three years duration
Treatment	Nursing measures. Treatment may be justified up to six months, or longer, if food intake is reasonable and general condition good	Cortisone or ACTH may terminate acute phase

Thoughts on Mastitis in Sows

BY

G. R. SUMNER

Liverpool

THIS condition has, over the past year or so, become very troublesome in many breeding herds. Its presence is evidenced by poor litters, both in quality and quantity, and is being brought more to light by an increase in the number of herds participating in recording schemes.

In general, mastitis is much more common in large herds than in small ones, and this is as one would expect; but I feel its incidence is aggravated by the fact that in large herds the routine practice is to turn sows out when safely in-pig, and only bring them into permanent farrowing pens at a late stage of pregnancy. By this method there is a saving of the capital outlay needed, but it does mean that the pens are occupied permanently by parturient sows, with a resultant build-up of infection. Very thorough disinfection of the pens after each occupant, and even udder washing prior to farrowing, does not appear to reduce the incidence of mastitis.

The condition is very much more apparent in overfed sows than in those underfed, and in my view the greatest single contributory factor is the "bagging up" of parturient sows. The physiological oedema associated with this process is, in part, due to a high protein diet, and also to a state of physiological "overdueness" in which the udder development has preceded the act of parturition. The resulting oedema gives rise to hot, fiery udders which are so painful that the sow will not allow the young to nuzzle, suck or trample over her, with consequent unsettling of the sow, and the prevention of the little pigs from drawing off the milk already present. This state is worsened by a weakly litter.

I classify three forms of mastitis :—

Acute, in which one or more udders are hard, inflamed and painful, with a change in the milk composition, and also a varying degree of systematic upset in the sow. This condition occurs within four days of farrowing, and causes a mortality of between 30 and 100 per cent. among the piglets.

Subacute, which generally appears between 7 and 21 days after farrowing, the only sign being one or more slightly hard udders, with a corresponding number of dead or dying piglets.

Chronic, a fibrotic udder, with or without suppuration, which usually becomes apparent soon after weaning.

In this practice I began to approach the problem in two ways, firstly by drastically cutting down the food intake of the sow for 14 days before parturition. This step, on its own, showed a considerable improvement in the picture. Secondly, samples were taken from all affected udders over a period of months for bacteriological examination, and it was found that within the main bacterial groups there was a definite herd consistency. The bacterial reports showed *S. agalactiae*, Group C Strept., *S. dysgalactiae*, *S. uberis*, *S. viridans*, *Staph. aureus*, and *Bact. coli* in both haemolytic and non-haemolytic forms.

Treatment given was originally a sulphonamide, then penicillin, then streptomycin or a combination of all three, and later chloramphenicol* and oxytetracycline†. These antibiotics were given, either intramuscularly or directly into the affected udders with variable results.

From the bacteriological examinations it was found that four herds were consistently running *Bact. coli* infection and in these herds Aggrecolin‡ was used. Because of the fact that the condition had already become firmly established and beyond hope of cure when first seen, it was decided that a more prophylactic step must be taken, and, therefore, a dose of 50 c.c. of Aggrecolin, given at approximately five days before the expected farrowing, was employed. Linked with a greatly lowered plane of feeding during the last 14 days, this approach has been dramatically successful on the following four farms.

	Size	Previous percentage of cases	Number of prophylactics given without a breakdown
Herd A.	75 sows and gilts	40	170
„ B.	45 „ „	20	36
„ C.	60 „ „	20	42
„ D.	14 „ „	40	27

The use of the parallel vaccine Aggrecovac has not maintained the pace set by the prophylactic use of Aggrecolin.

The use of the parallel vaccine, Aggrecovac has not maintained the pace set by the prophylactic use of Aggrecolin.

* Chloromycetin. † Terramycin.

‡ Polyvalent antibacterial serum prepared in horses immunised against *Bact. coli communis* strains. Bayer Products, Ltd.

Atrophic Myositis in a Dog.—*Concluded.*

after the onset of symptoms, the owner reported that there was almost complete restoration of jaw function, although the muscular atrophy persisted and there was some slight restriction of jaw movement.

Comment

While it is not known whether atrophic myositis and eosinophilic myositis are distinct or related conditions, there is some value in making a differential clinical diagnosis, since atrophic myositis, despite the long period of nursing that may be necessary, may show eventual recovery, whereas in eosinophilic myositis, remissions of symptoms may be merely temporary, and the long-term outlook bad.

Acknowledgments.—To Mr. G. C. Knight for permitting me to examine this case and providing the periodic reports on its progress, to Miss J. O. Joshua for help and guidance in the preparation of this paper, and to Mr. F. Shepherd for photography.

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The Isolation of Ringworm Fungi from Unusual Hosts

BY

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IT has been well established that ringworm fungi are not host-specific although some of them have a predilection for certain animals. In the course of investigating a number of cases of ringworm we have obtained isolates of two dermatophytes, *Trichophyton verrucosum* and *T. mentagrophytes* from animals not usually reported as being affected by these fungi.

T. verrucosum

This fungus is the common cause of cattle ringworm in Britain (Mortimer, 1955). It is often transmitted to man (Walker, 1950) and it has been reported occasionally from animals other than bovines (Blank, 1955). As far as we are aware there are only two reports of *T. verrucosum* infection in dogs. Baudet (1935) described a single case in France. Kral (1955) did not give details of the number of cases which he reported in U.S.A. but inferred that there were many, since he said that short-haired breeds such as Boxers and Doberman Pinschers were most commonly affected.

We have twice isolated *T. verrucosum* var. *discoides* from dogs in Scotland. The first occasion was from a nine-year-old male Spaniel which had an itchy patch on the side of its body opposite the last thoracic vertebra. The area affected was scaly, particularly at the periphery, and becoming devoid of hair. Material from the lesion was negative for fungi on microscopy but the dermatophyte was recovered in culture. The dog was from a rural area in Dunbartonshire and although there was no history of its having been in contact with cattle, such contact was not improbable. The infection occurred in January. The second case which was noted in April, 1956, concerned a three-and-a-half-months-old male Collie which had bare areas of about 1½ in. in diameter on its head and right shoulder. This puppy had been reared on a farm in Dumfriesshire. Examination of scrapings from the lesions revealed a heavy, large-spored ectothrix infection, and a culture of *T. verrucosum* var. *discoides* was obtained independently by each of us. This is the first report of this dermatophyte causing canine ringworm in Britain. Georg (1956) notes that the few cases of equine infection with *T. verrucosum* which have occurred in U.S.A. and in Britain have had close contact with ringworm-affected cattle and it is interesting that in our cases the dogs also had opportunity for similar contact. It would appear, therefore, that opportunity for infection is possibly a more important factor than is the breed of dog as stated by Kral.

T. mentagrophytes

In contrast to *T. verrucosum*, *T. mentagrophytes* commonly affects a wide variety of animals (Georg, 1956). It has frequently been suggested that cattle are the source of *T. mentagrophytes* infections in humans (Beare & Cheeseman, 1953 ; Carlier, 1954 ; Rook & Frain-Bell, 1954 ; Rook, 1956), but there are only three recorded isolations of this fungus from cattle. Two, reported 20 years ago, were isolated outbreaks each involving the cattle in a particular herd ; one of these outbreaks was in Canada (Davidson, Gregory & Birt, 1934) and the other in Britain (Muende & Webb, 1937). The third case occurred recently in U.S.A. (Georg, 1956) and was a single isolation from 51 specimens of suspected cattle ringworm from different parts of the country ; the remainder of her isolates were of *T. verrucosum*. Ainsworth & Austwick (1955) from the 41 cases of cattle ringworm in their survey of animal mycoses in Britain, and Mortimer (1955) from 36 cases in East Anglia, recovered exclusively *T. verrucosum*.

Our investigation of cattle-ringworm cases in Scotland over the past four years has revealed 99 isolates of *T. verrucosum* and one of *T. mentagrophytes*. The *T. mentagrophytes* isolate was obtained in October, 1952, from an Ayrshire bull-calf which had typical bovine ringworm. Microscopic examination was confined to ascertaining the presence of a dermatophyte and consequently details of the appearance of the fungus in the hair cannot be given. This is only the second occasion on which *T. mentagrophytes* has been isolated from a bovine animal in Britain and it is apparent that infection of cattle with this fungus is extremely rare.

Summary

Details are given of the isolation of *T. verrucosum* var. *discoides* from dogs for the first time in Britain. A single isolation of *T. mentagrophytes* from cattle is also reported.

Acknowledgment.—We are indebted to Messrs. D. Boyce, T. B. Fleming and I. M. Lauder, MS.R.C.V.S., who submitted the specimens from the cases reported.

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VETERINARY MEDICAL ASSOCIATION OF IRELAND

At the annual general meeting of the Veterinary Medical Association of Ireland, held in Dublin, the following officers were elected: President, Mr. J. S. M. Cosgrove; President-elect, Mr. P. O'Hagan; Hon. Treasurer, Mr. J. A. Flynn; Hon. Secretary, Mr. M. A. Gallaher. The following were selected to fill vacancies on Council: Messrs. P. J. Daly, B. A. Kealy, P. J. Lyons, T. A. Mernagh, P. J. McCarroll, J. K. McCarthy, and P. J. Ryan.

The Single Intradermal Comparative Tuberculin Test in the Egyptian Buffalo

BY

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CARPANO (1935) carried out the intradermal and subcutaneous tuberculin tests on buffaloes and concluded that the subcutaneous test is the more accurate. Mahmoud (1955) showed the unreliability of the subcutaneous test and preferred the application of the intradermal test to buffaloes.

Investigation

The comparative tuberculin test was carried out on 43 adult and four immature buffaloes. The site of injection was the middle third of the left side of the neck. Twelve adult animals were judged to be positive reactors, in all of which the reactions to mammalian tuberculin were hot, oedematous and painful. The actual measurements were as follows :—

Buffalo number	Measurements in Millimetres			
	Avian Tuberculin		Mammalian Tuberculin	
	1st Reading	2nd Reading	1st Reading	2nd Reading
4	14	17	12	30
5	14	16	12	60
7	10	11	10	30
11	14	15	13	32
12	14	17	10	44
13	12	14	10	34
14	16	18	14	38
15	20	24	20	40
16	16	23	14	28
22	29	32	27	42
23	23	24	20	35
38	12	12	11	29

These 12 animals were slaughtered, but the *post-mortem* examinations were not as thorough as could have been wished, approximately 10 minutes being the maximum spent on any carcase and its organs. The *post-mortem* findings were based on macroscopic lesions found by the veterinary meat inspector at Cairo abattoir. These findings were as follows :—

Buffalo 4.—In fair condition. Lesions in apical lobe of each lung, bronchial and mediastinal lymph nodes.

Buffalo 5.—In excellent condition. Lesions in the bronchial lymph nodes.

Buffalo 7.—In fair condition. Lesions in the bronchial and mediastinal lymph nodes.

Buffalo 11.—In fair condition. Lesions in the retropharyngeal lymph node.

Buffalo 12.—In fair condition. No lesions.

Buffalo 13.—In good condition. Lesions in the bronchial and mediastinal lymph nodes.

Buffalo 14.—In excellent condition. Lesions in the cardiac lobe of the left lung, bronchial and mediastinal lymph nodes.

Buffalo 15.—In good condition. Lesions in the apical lobe of the left lung, bronchial, mediastinal and supramammary lymph nodes.

Buffalo 16.—In good condition. No lesions.

Buffalo 22.—In good condition. Lesions in the bronchial and mediastinal lymph nodes.

Buffalo 23.—In good condition. No lesions.

Buffalo 38.—In fair condition. Lesions in the bronchial and mediastinal lymph nodes.

As we were not satisfied with the *post-mortem* examinations, the lymph nodes from animals Nos. 12, 16 and 23 were separately collected and subjected to bacteriological and biological examinations which revealed the presence of the infection in the nodes of the three buffaloes.

Discussion and Summary

In Egypt, buffaloes are the main producers of milk and their meat is used for human consumption. Tuberculin sensitivity in these animals has not been seriously studied. Carpano (1935) reported that the subcutaneous tuberculin test is the most accurate ; Mahmoud (1955) preferred the intradermal test but he obtained a number of positive reactors which showed no lesions on *post-mortem* examination.

During the present investigation, two animals reacted positively to avian tuberculin and negatively to mammalian tuberculin. This suggested the presence of non-specific infection in the herd under examination and may account for the no-lesion reactors which occurred on the same farm on the application of the intradermal test by previous investigators, and showed the feasibility of using the comparative test.

In all the positive reactors, the reactions to mammalian tuberculin were hot, oedematous and painful. The severity of the reaction noted in buffaloes was much greater than that usually seen in cattle. Twelve out of 43 adult buffaloes reacted positively to the test, showing that the incidence of tuberculosis among the animals examined is about 28 per cent., a rather high incidence particularly in a country where the idea exists that buffaloes are somewhat resistant to tuberculosis. No reactors occurred among the immature animals.

Tuberculous lesions were macroscopically detected in 9 out of 12 positive reactors. The other three yielded *M. tuberculosis* on bacteriological and biological examinations. The lesions were mainly confined to the respiratory system except in animal No. 15 where the supramammary lymph node was also infected, and this led to its condemnation.

Acknowledgments.—The writers gratefully acknowledge the help given by the Dean of the Faculty of Veterinary Medicine ; the Head of the Department of Animal Production, Faculty of Agriculture ; the staff of the Departments of Medicine, Meat Inspection and Bacteriology, Faculty of Veterinary Medicine ; and the Veterinary staff of Cairo Abattoir.

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Current Literature

BOOK REVIEWS

The Management of Horses. Veterinary Bulletin No. 4, 1955. Published by the Veterinary Dept. of Nigeria. Price 6d.

This Bulletin is obviously intended for use in Nigeria for horses kept under local conditions, but it is reasonable to suggest that it may well have application to other countries in West Africa.

It consists of 24 pages, and is good value for the money. It is written in simple straightforward language, gives a great deal of excellent sound advice both to the beginner and to the rather more experienced African owner. The subjects dealt with are Conformation, Nigerian Breeds, Feeding, Grooming, Care of the Feet, Stabling, Bedding, Disposal of Manure, Exercise, Saddlery, Administration of Medicine, and First Aid for some simple diseases and accidents.

Many of the terms are, of course, Nigerian, and the conditions are local, but the advice on complaints and common minor injuries and abnormalities is simple, straightforward and basically sound. The staff of the Veterinary Department is to be complimented upon producing what should be an extremely useful booklet for the African veterinary assistant and for the African owner who can read and can be persuaded to accept the advice given.

Milchkunde und Milchhygiene. Seventh Edition, (499 pp.) By F. SCHÖNBERG. M. & H. SCHAPER. Hanover. (1956).

This is the latest edition of a well-known handbook on dairying and milk hygiene written by a world-renowned authority, who is Professor and Director of the Veterinary Institute for Food and Milk Hygiene in the Veterinary High School in Hanover. Professor Schönberg is editor of the *Archiv für Lebensmittelhygiene*, a monthly periodical devoted to food hygiene, and he has also published many original papers in the field of milk and meat hygiene.

The text has been thoroughly revised and brought up-to-date and is lavishly illustrated by photographs and documented by many references to the literature.

It is an encyclopaedic work, beginning with milk consumption in Germany and other countries, then dealing with the composition of milk and its value as a food, and continuing with an extensive section on milk hygiene which includes consideration of diseases of cattle that affect the milk, the health of persons who handle milk, and cleanliness at all stages in milk handling. A special section is devoted to "Vorzugsmilch," a high quality raw milk from herds free from tuberculosis, brucellosis, mastitis and salmonellosis, and kept under good hygienic conditions, and which has to satisfy very stringent bacteriological tests. This special grade is the only milk that may be sold without heat treatment.

Pasteurisation is dealt with in detail and a new method of treating milk, "Uperisation," is described. This was first used in 1952 and involves pre-heating the milk, exposing it to a high vacuum, heating to a higher temperature and then suddenly raising the temperature within less than a second to 150° C. by the introduction of high-pressure steam. This process is as effective as ordinary sterilisation in killing infective agents. It has the advantage of producing a milk which looks and tastes like pasteurised milk but is virtually sterile since even spores are destroyed. It thus offers possibilities for packing into sterile containers so that, like sterilised milk, it could be kept almost indefinitely.

Methods of detecting harmful or dirty milk are described, including cell counts, stained films, serological tests, plate counts, and tests for pasteurisation and sterilisation.

Finally, there is an appendix of 100 pages which deals briefly with acidified milks, butter and cheese and gives the text of the legislation in Germany which relates to milk production and dairying.

The book is clearly written, well produced and illustrated and contains a wealth of information which is of interest to all who are concerned with dairying. The illustrations of modern cowsheds, milking parlours, movable bails and dairy machinery show that the Germans have done much in the last 10 years to improve the standard of milk produced and the purity and safety of the product sold to the consumer. The recent introduction of a self-contained travelling dairy which calls at small farms, milks the cows and carries away the cooled milk, thus solving a labour problem and allowing the farmer to have an occasional breakfast in bed, is another example, quoted recently in a British farming paper, of German ingenuity in the field of dairying.

"The Rabbit" by H. V. THOMPSON & A. N. WORDEN (1956). New Naturalist Monograph Series. Collins, London. 240 pp. 16s.

Here is a most attractive and enjoyable book. Although it might be described as the rabbit's lament, coming as it does when the countryside is almost, though not quite, deprived of that attractive though destructive little rodent, the information about its life is both entertaining and instructive. A great deal of excellent field work has clearly gone into the collection of the data presented here in a form which is made even more assimilable by a spate of excellent diagrams and photographs.

The progress of events leading up to the virtual elimination of the rabbit by myxomatosis is indeed a dramatic one. The story is fascinating, moving as it does from country to country, from vector to vector, and through one political controversy to another.

If any justification were needed to support an eradication campaign, the information is here in ample measure. The overall picture of destruction is probably very much worse than is realised. The supporters of eradication have undoubtedly been accused more than once of "upsetting the balance of nature"—but read on, it is surely the rabbit that has upset the balance. Its departure should, to some extent, establish the *status quo*.

There is an immense amount of information included in this book which requires no special scientific knowledge to assimilate. Moreover, ignorance is dissipated and knowledge enhanced by an extensive glossary. Our only regret can be that this book did not appear sooner.

ABSTRACTS

The Avoidance of X-ray Injury. DYCE, K. M., & HAWKINS, A. E. (1956). *Brit. Vet. J.* **112.** 475-482.

In this contribution the authors review the risks associated with the practice of diagnostic radiology, risks which they feel are not always fully appreciated by the veterinary profession.

One reason for the failure to realise the dangers involved is the unseen and insidious nature of the damage caused by X-rays—so that by the time this is apparent, irreversible pathological changes are likely to have occurred. The authors further stress that it is the assistant restraining the patient, rather than the operator of the apparatus, who is most likely to be injured, and that successive authoritative publications have progressively reduced the estimate of the amount of X-rays which it is considered can be received without ill effect.

The principal sources of radiation are considered to be:—

1. The primary beam—the dangers of this are usually recognised; but it could be a very serious menace if the unprotected hand or arm was placed within the area of the beam while restraining an animal.

2. Leakage from the tube—this is unlikely to occur with a modern apparatus, but it might be a dangerous and unsuspected source of trouble with an old machine.

3. Scattered radiation (which occurs when the primary beam strikes an object in its path)—this hazard is of significance to those in close proximity to the beam.

In order to reduce the risks of exposure to X-rays to a minimum, a number of routine precautions should be observed. These include the following:—

Restriction of the number of exposures made—by refraining from radiography intended solely for the purpose of placating the owners of animals, and by paying greater attention to the technique of exposure and development in order to avoid the necessity of repeating a radiograph. As far as possible the use of grids and slow films should be avoided, since these require an increased exposure time (and also increase the likelihood of movement of the patient, blurring the radiograph).

The insertion of an aluminium filter, although not usually adopted, should help to cut out the softer radiations. Considerable protection is afforded by the use of cones or diaphragms to reduce the field to the minimum required for the region being investigated.

Protective clothing should always be worn by those holding and restraining patients, but this clothing tends to be very cumbersome and may give rise to a false sense of security. Therefore, whenever possible, the patient should be heavily sedated or fully anaesthetised so that no restraint is needed.

A lead-lined box which can be placed over the patient to reduce scattered radiation is described, but it is admitted that this is heavy and likely to frighten nervous animals.

The use of fluoroscopy is discussed and, owing to the very severe risks associated with this and also its limited usefulness under conditions of practice, the employment of this procedure is deprecated. Precautions to be observed where the use of fluoroscopy is essential are mentioned.

A check on the amount of radiation actually received may be made by wearing a sensitive film which is developed and examined periodically, or by undergoing a regular blood examination.

The authors conclude by stating that, provided the sources of danger are appreciated, reasonable alertness and caution are sufficient to avoid any risks in the procedure of radiography. A number of useful references are given.

Intramedullary Fixation of Long Bones by Heterogeneous Bone Pins. TEMIZER, M. (1956). *Vet. Med.* **51.** 324-325.

In this brief article the author reports the use of heterogeneous bone pins for the fixation of fractures in sheep, dogs, cats and chickens. A successful result in each instance is recorded, except where the animal died from some other cause.

The pins used were prepared to the required size and shape (as judged by X-ray) from the shafts of dried long bones of horses. The bones used should be carefully selected so that they are neither so fresh that they still contain organic matter, nor so old that they have become brittle. The pins may be sterilised by autoclaving or boiling, and are inserted at the fracture site employing aseptic techniques. One end of the pin is notched, a silk or catgut ligature is passed through this notch, and the pin is inserted, notched end first, for its full length into the medullary canal. Traction on this suture enables the pin to be drawn across the fracture site once the fracture has been reduced.

External splintage is considered advisable in some but not in all of the cases.

In the author's experience the pin was entirely absorbed within 45 to 70 days.

(It is not stated whether these fractures were of clinical or experimental origin. In addition there is a discrepancy in the total number of cases—both 39 and 45 cases being mentioned—Abstractor.)

S. W. D.

The Role of the Ram in Vibriosis of Sheep. FIREHAMMER, B. D., MARSH, H., & TUNNICLIFF, E. A. (1956). *Am. J. vet. Res.* **17.** 573-584.

Although it is generally accepted that vibriosis of cattle is a true venereal disease, spread by the bull at the time of coitus, the method of spread of vibriosis of sheep remains obscure. The observations and experiments reported by the authors suggest that the ram is not the source of infection. Thus the insemination of ewes with semen containing pathogenic *Vibrio fetus* organisms failed to result in abortion, while the intravenous inoculation of ewes in different stages of pregnancy showed that ewes are resistant to infection during the first month of pregnancy but are quite readily infected during the second, third or fourth month.

In contrast to the disease in cattle, infertility was not found to be a feature of field cases of vibriosis of sheep.

E. A. G.

News and Comment

EXPORT OF LIVE CATTLE FOR SLAUGHTER ON THE CONTINENT

Members of the profession, who have been disturbed by reports in the press of suffering and even cruelty alleged to be caused by the traffic in live cattle to continental slaughter-houses, will be glad to learn of the appointment of a Select Committee to enquire into the matter. It is particularly pleasing to see among the names of the Committee those of Mr. G. N. Gould, a past President of the B.V.A. and present hon. treasurer of the R.C.V.S., Lady Tweedsmuir, who opened the Association's Congress in Aberdeen in 1953, and Mr. A. J. Champion, M.P., a valued friend of the profession.

The official notice declaring the appointment of the Committee reads as follows:—

"The Minister of Agriculture has made the following announcement:—

"'My Rt. Hon. Friend the Secretary of State for Scotland and I have appointed a committee to enquire into the export of live cattle and to make recommendations. Lord Balfour of Burleigh has kindly agreed to act as Chairman and the other members are my Hon. Friend the Member for Aberdeen South (Lady Tweedsmuir), the Hon. Member for Derbyshire South East (Mr. A. J. Champion), Mr. G. N. Gould, J.P., M.R.C.V.S., and Mr. Clyde Higgs, M.C. The committee appreciate the need for urgency in carrying out their tasks and will start their enquiry forthwith.

"'In the meantime my Right Hon. Friend and I have made an Order under the Diseases of Animals Act requiring cattle to be rested for 10 hours and to be provided with food and water at or near the place of embarkation.'*

"The committee's terms of reference are:—

"'To enquire into the export trade in live cattle from Great Britain to the Continent for slaughter, the considerations affecting the continuance of this trade, and steps to avoid any unnecessary suffering of the cattle at all stages of their journey; to consider whether slaughter before export would be a desirable and feasible alternative; and to make recommendations.'

"The Secretary of the committee will be Mr. T. P. Marten of the Ministry of Agriculture. A further announcement will be made as soon as possible about the committee's arrangements for taking evidence."

IN PARLIAMENT

Following the announcement of the setting up of this Committee a number of Questions and Answers were exchanged in the House of Commons on February 7th. Hansard reports as follows:—

MR. DYE: While thanking the right hon. Gentleman for that reply, and for the action that he has taken, may I ask whether he is aware that there is a feeling throughout the country that this traffic in live animals to the Continent has developed? Would he see that the latter part of his reply is carried out to the best of his ability, not only in this country, but also on the Continent?

MR. AMORY: Yes, Sir. I agree with what the hon. Gentleman has said about public concern on this matter and I fully share it. My right hon. Friend and I will certainly not countenance the continuance of this trade unless we are satisfied that no inhumanity is involved. Therefore, I am anxious that prompt action should be taken. I am making this Order to close what I have found to be a gap in our provisions in this country. I am in touch with the French Government about conditions on the other side of the water, and I am glad to say that I understand the Committee will hold its first meeting on Tuesday of next week.

MR. E. JOHNSON: If my right hon. Friend is not able to be completely satisfied that there is no cruelty on the other side of the water, will he seriously consider banning this trade altogether and having the cattle slaughtered in this country and shipped as carcase meat?

MR. AMORY: My hon. Friend will note what I said earlier in reply to the first point in his Question. The substitution of a trade in carcase meat for live animals is one of the problems involved. I understand that it is by no means an easy one to solve, but it is one on which I hope that the Committee will give us some advice.

MR. SORENSEN: While thanking the Minister for the action he is proposing to take, may I ask him approximately how long the inquiry is likely to last and, therefore, when its report will be published? Do we take it that as a result of the report the right hon. Gentleman will himself embody the proposals in appropriate legislation?

MR. AMORY: I hope that the Committee will find it possible to report within about three months, but, of course, it would be open to it to make an interim report earlier, if it wished to do so. The Committee is fully conscious of the urgency of the matter.

As regards what action my right hon. Friend and I would think it right to take after the report has been presented, I think we must wait and see what are the recommendations.

MR. FELL: While being very grateful to my right hon. Friend, as I am sure the whole country will be, for setting up this Committee, I cannot view with complete equanimity the fact that it may take three months to report. This trade has been going on now for some time, and such disturbing aspects of it as have been reported suggest that the French importer had given instructions that the animals were not to be watered as this would increase their weight, and that they went without water from the Thursday evening of one week until the following Tuesday, as stated by the veterinary officer who went with them.

* See page 137.

If these practices are being agreed to by exporters in this country on the instructions of French importers, it seems disgraceful that the trade should be allowed to continue any longer.

MR. AMORY: I assure my hon. Friend that there will not be inaction in the meantime. I mentioned that we have made representations to the French Government, and I have already had assurances from the French authorities that animals will be watered and fed on disembarkation. I am in further touch with them, and I can assure my hon. Friend and all other hon. Members of the House that I have not been inactive in this matter in the last two months. My veterinary inspectors have been doing everything possible. There are still some difficulties, notably in the lairage accommodation, because the numbers have been so much greater than were expected, but they have now gone down substantially. I can promise hon. Members that every step I can take will be taken to improve the position pending receipt of the report.

MR. ROYLE: Is it good economic policy to export fat cattle to the Continent when we have to buy so much beef from the Argentine and other sources?

MR. AMORY: It is difficult to explain these matters, because one can argue about them a great deal, but on the purely economic point I am satisfied that the trade is of advantage to this country. I would add that however advantageous it is to us, if an element of inhumanity is involved I think that all hon. Members will agree that it is trade we could do without. I am hopeful that we shall succeed in eliminating all inhumanity in this trade.

MR. HURD: Would my right hon. Friend consider setting a limit to the number of cattle to be shipped during the next three months while the Committee is establishing the facts, so that there is no unnecessary cruelty or hardship caused through congestion at the markets and ports?

MR. AMORY: I am hopeful that there will not be congestion, but I shall keep a close watch on the progress of this trade during the coming two or three months.

THE EXPORTED CATTLE PROTECTION ORDER, 1957

As we go to press we learn of the issue of this Order, referring to the matter above.

The Order, which comes into force on February 26th, requires that any cattle which are to be exported from Great Britain to any place outside the United Kingdom, the Channel Islands, the Isle of Man, or the Republic of Ireland, whether by sea or by air, shall be rested for at least 10 hours, three of which shall be hours of daylight, before they are loaded in a ship or aircraft in which they are to be carried. They can be rested only on premises approved for that purpose by the Minister of Agriculture or the Secretary of State for Scotland. Immediate notice must be given to an inspector of the Ministry, and to the local authority, of the arrival of animals at the approved premises. Adequate food and water and in winter, shelter and bedding, are to be provided. An inspector of the Ministry or local authority, or a police officer may inspect the animals at any time during the resting period or at any time prior to departure. An inspector may mark and prohibit the carriage of any animal by ship or aircraft which, in his opinion, is unfit to travel.

THE CENTRAL VETERINARY SOCIETY

A meeting of the Society, to be held on March 7th, should prove of especial interest to clinicians. A circular (of which copies may be obtained from the hon. secretary, Mr. Bruce V. Jones) giving details of the meeting reads as follows, under the heading, Clinical Problems in Everyday Practice:—

The meeting will endeavour to tap the knowledge that never reaches print. Every veterinary surgeon in practice has his or her pet theory or problem, surgical procedure or technique, line of treatment, diagnostic method, design of instruments, etc. We hope to be able to persuade you to attend this meeting both to contribute and to learn. A list of subjects is given below and notification of subject and intention to contribute should be sent to the secretary as soon as possible. Subjects other than those listed can be included, and contributions from those unable to be present may be made in writing and will be read.

Possible subjects

Prevention and treatment of encephalitis or chorea or paraplegia; euthanasia; treatment of eczema, or demodectic mange or alopecia; treatment of halitosis, tracheitis, canine asthma; persistent coat shedding; false pregnancy; lactation; removal of tapeworms; ulceration of the muzzle; deficient nasal pigmentation; extraction of carnassial teeth; persistent deciduous teeth; blocking of naso-lachrymal duct; districhiasis; hyperplasia of conchal cartilages; diagnosis of perforated ear drum; treatment of pannus or corneal ulcer; persistent lachrymation over face; blepharitis; castration of adult male cats; castration of dogs—indications; sterilisation of anal pouches; chemical and systemic destruction of warts; short docking of dogs; pedal cysts; diagnosis and treatment of ringworm; fungous infections of nail roots; interdigital eczema or "sweaty foot"; optimum sites for intramuscular injections; taking adequate blood samples; giving recommended intramuscular injections subcutaneously; size and suitable points for intravenous needles.

Details of contribution—to last about three to five minutes—should be sent to the hon. secretary at Messrs. Allen & Hanbury's Ltd., Bethnal Green, E.2, by the end of this month. All members of the profession will be welcome at the meeting.

THE RABBIT CLEARANCE CAMPAIGN

At a press conference on November 13th, Lord St. Aldwyn, Joint Parliamentary Secretary to the Ministry of Agriculture, launched this winter's drive against rabbits. It is too early yet to gauge the results of

the campaign but the Ministry's Rabbit Clearance Committee, which is a representative body of farmers, estate owners, workers, and other interests, took stock of the position at their meeting last week.

The Committee report that myxomatosis is still working slowly in North Staffordshire, the south-west corner of the West Riding, and in isolated places in Cumberland, Lancashire, and Merioneth. Occasionally outbreaks of myxomatosis crop up in widely scattered areas which had previously been cleared. The secondary outbreak in Hampshire has continued to spread and an outbreak in the Lewes area of East Sussex killed many rabbits in October.

Although there has been little change in the position regarding myxomatosis, there has, on the other hand, been an increase in the rabbit population—in some cases not very marked—in 20 counties. This increase has been more noticeable in the south-east and the Midlands and in some parts of South Wales. In 12 counties a decrease in the rabbit population was reported. Over 3,000 cases of rabbit infestation were investigated and followed up during November and December.

The Rabbit Clearance Committee emphasise that unless full advantage is taken of the next few weeks this summer may see an appreciable increase in rabbit damage, and a breeding stock capable of putting the rabbit back in considerable numbers.

THE GLOUCESTER CORPORATION BILL

Eighteen of the Private Bills deposited in Parliament for the Session 1956-7, are promoted by local authorities.

On perusal of the Gloucester Corporation Bill by the Royal College, it was found that the clauses relating to animal feeding meat were governed by the following definition of the expression—" authorised officer ":—

> " Authorised officer has the meaning assigned to that expression by section 86 of the Food and Drugs Act, 1955."

This definition was regarded as unsatisfactory by the Council of the Royal College, as under section 86 of the Food and Drugs Act, 1955, members of the Royal College employed by local authorities are deemed to be " authorised officers " only for the purpose of the examination and seizure of meat under the provisions of Part I of the Act of 1955 relating to food unfit for human consumption. It appeared to the Royal College that the proposed definition would exclude members of the Royal College as " authorised officers " for any purpose relating to animal feeding meat.

The College took immediate action, through its Parliamentary Agents, and has been successful, without the necessity of petitioning Parliament, in getting the County Council to change the definition to the following:—

> " ' Authorised officer " means any officer who is by virtue of the Food and Drugs Act, 1955, an authorised officer for the purpose of the examination and seizure of meat under the provisions of Part I of that Act relating to food unfit for human consumption."

This definition the College or the B.V.A. has caused other local Government authorities to accept in the past.

ELECTRICAL EUTHANASIA

It is some little time now since the B.V.A. accepted the principles to be observed in the euthanasia of dogs by electrical means, and gave approval to the use of cabinets which were modified to give effect to these principles.

It will be recalled that the recommendation of the B.V.A. Euthanasia Committee, published in THE VETERINARY RECORD on November 13th, 1954, were as follows:—

> That approval be given to any method of electrical euthanasia which satisfies the following conditions:—
>
> (a) The unit should be tested before being put into use, and at regular intervals, to ensure that from mains frequency (50 cycles) the unit is capable of giving a current of at least 0.5 amp. for one second across the head (to produce unconsciousness); at least 0.5 amp. for two seconds through the body (to stop the heart); the total time being limited to three seconds by timing apparatus.
>
> (b) There should be a satisfactory continuity tester in the circuits designed to show in advance that when the current is eventually switched on an adequate shock will be given. (The current in the continuity tester should be an alternating current of subsensory strength.)
>
> (c) Ammeters should be incorporated in the circuits to indicate to the operator that an adequate current is passed in each lead.
>
> The Committee further recommended that manufacturers should have new models tested by an experienced authority approved by the British Veterinary Association to ensure the fulfilment of the above recommendations. The unit should only be used by a trained operator who would be instructed to observe each dog immediately after the shock to ensure that a fit (producing unconsciousness) had taken place and that the heart had ceased to beat.

A British Standards Institution specification will shortly be issued on the construction and use of euthanasia cabinets. Pending the issue of this document, the B.V.A. would again remind users of cabinets at present in service that unless these instruments have been modified to give effect to the principles set out above, they must be considered unsatisfactory. If there is any doubt that these provisions are not fully satisfied, the dog must be anaesthetised before being put into the cabinet.

UNIVERSITY NEWS

Liverpool

The Senate of the University, at its meeting held on February 6th, 1957, agreed that the Degree of Ph.D. should be conferred on Mr. J. O. L. King, Senior Lecturer in Animal Husbandry.

At its meeting held on February 12th, 1957, the Council of the University made the following appointments:—

Lecturer in Clinical Veterinary Pathology: Mr. J. R. Thomlinson, B.SC., M.R.C.V.S.

Lecturer in Veterinary Histology: Dr. A. Wright, B.SC., PH.D.

DEATH OF "WINSTON"

Readers will have read in the newspapers of the death at the age of 17 of "Winston," the famous Metropolitan police horse ridden by the late King George VI and by the Queen at the Trooping of the Colour. "Winston," who was a golden chestnut of 16½ hands, was half brother to "Foxhunter," and became in his own way almost as celebrated. He got his name from the fact that each year horses are bought for the mounted police a different letter of the alphabet is chosen as initial. "Winston" joined the Force the year the initial for horses' names was W, and being considered the finest horse among those purchased was named after the great Prime Minister.

He was first ridden at a Trooping ceremony in 1947, being a great favourite of the late King for his perfect manners and admirable ride. The Queen, then Princess Elizabeth, rode him in 1949 and chose him regularly thereafter. It is a privilege of the mounted branch of the Metropolitan police to provide all the horses used for the Trooping each year, and though she had selected two or three possible reserves, the Queen continued to ride "Winston" until his semi-retirement last year.

NEW D.V.O. FOR CAMBRIDGESHIRE

On the relinquishment of his post as D.V.O. for Herefordshire and his transference to the post of D.V.O. for Cambridgeshire and the Isle of Ely—which took effect on February 4th—warm tributes were paid to Dr. A. J. Wilsdon by the Herefordshire County Branch of the National Farmers Union, the local press, and others. At the Annual General Meeting of the Herefordshire N.F.U., the following resolution was passed with acclamation: "This meeting, representative of the whole farming community in the County, places on record the appreciation of Herefordshire farmers of the outstanding contributions to animal health and services to agriculture in the County rendered by Dr. A. J. Wilsdon over the past 23 years. In regretting his departure from the County all join in expressing cordial good wishes for his future."

Sir James Turner, President of the Union, was present at the meeting. Immediately after what was described as "the great ovation" with which Dr. Wilsdon's name was received, Sir James said: "This is an occasion when you have paid your respects and expressed your regard for a public servant. It is an extremely difficult thing, I always think, for a public servant to discharge his responsibilities according to his conscience and according to the duty laid down by his employers, and at the same time capture the affection of the farming community as indeed you, Dr. Wilsdon, must have done by the demonstration that so moved you. Your silence, sir, I think was appreciated by everyone in this room as a real and profound appreciation of the gesture made to you. You must feel a proud and happy man."

The County newspapers devoted a considerable amount of space to Dr. Wilsdon's professional and scientific achievements and referred at the end of the article to his recent work in connexion with the Hereford cattle market in getting the new attested section, and in designing the new pig market with a view to eliminating infectious diseases there.

PERSONAL

Births

MACADAM.—On February 6th, 1957, to Pearlie, wife of Ian Macadam, PH.D., B.SC., M.R.C.V.S., of The Federal Dept. of Veterinary Research, P.O. Vom, Northern Nigeria, a son, Argyll Donald.

MCMANUS.—To Lottie (*née* Gilmore), wife of Dermot McManus, M.R.C.V.S., at the Princess Elizabeth Hospital, Nairobi, a son, Christopher Owen.

Mr. M. Whalley Taylor, chief poultry advisory officer for the West Midland province of the National Agricultural Advisory Service, has been appointed agricultural and food attaché to H.M. Ambassadors at Copenhagen and the Hague. He will also hold a watching brief on technical agricultural developments and food trade trends in Western Germany.

Dr. Edward Morgan. His many friends in the profession, and in particular those who have enjoyed his writing from time to time in the Welsh vernacular press, will regret to hear of the illness of one who was for years the sole representative of the R.C.V.S. in Venezuela. Dr. Morgan underwent two major operations in January, and is now confined to his bed at his farm at Guataparo, Valencia. We wish him a speedy recovery and a safe return from his long "exile."

Dr. H. Temperton has been appointed vice-principal of Harper Adams Agricultural College. Dr. Temperton is at present head of the poultry department of the College and of the National Institute of Poultry Husbandry.

COMING EVENTS

February

19th (Tues.). 81st Annual General Meeting of the Eastern Counties Veterinary Society at the Bell Hotel, Norwich, 11.15 a.m.

21st (Thurs.). Annual Ball of the Royal (Dick) School of Veterinary Studies in the Assembly Rooms, George Street, Edinburgh, 8.30 p.m.

Annual General Meeting of the South Eastern Veterinary Association at the Royal Star Hotel, Maidstone, 2.30 p.m.

Spring Meeting of the Dumfries and Galloway Division at the Station Hotel, Dumfries, 6 p.m.

Joint Meeting of the Herts and Beds Society of the B.V.A. with the Mid-Herts Division of the B.M.A. at the Pea Hen Hotel, St. Albans, 8.15 p.m.

22nd (Fri.). Annual Ball of the Liverpool University Veterinary Society in the Students' Union, 8 p.m.

27th (Wed.). 95th Annual General Meeting of the Lancashire Veterinary Association in the University Veterinary Hospital, Liverpool, 2 p.m.

Meeting of the Scottish Metropolitan Division at the Royal (Dick) School of Veterinary Studies, Edinburgh, 4.30 p.m.

March

2nd (Sat.). Meeting of the Scottish Regional Group of the A.V.T. & R.Ws. at the University of Glasgow Veterinary Hospital, 10.15 a.m.

6th (Wed.). Annual General Meeting of the A.V.T. & R.Ws. Northern Region at the Veterinary Hospital, Liverpool, 2 p.m.

7th (Thurs.). General Meeting of the Central Veterinary Society at the Royal Veterinary College, Camden Town, N.W.1, 6 p.m.

Inaugural Meeting of the British Small-Animal Veterinary Association in the Main Hall, Royal Veterinary College, Camden Town, N.W.1, 3 p.m.

28th (Thurs.). Meeting of the British Veterinary Poultry Association at the Royal Veterinary College, Camden Town, N.W.1, 11 a.m.

30th (Sat.). Annual Convention of the Ceylon Veterinary Association in the Queen's Hotel, Kandy, Ceylon.

April

6th (Sat.). Annual Dinner of the B.R.X. Club at the Royal Veterinary College, Camden Town, N.W.1, 6 p.m.

May

24th (Fri.). 165th Annual Ball of the Royal Veterinary College Students' Union Society at the Royal Veterinary College, Camden Town, N.W.1, 9 p.m.

BRITISH VETERINARY ASSOCIATION QUARTERLY MEETINGS IN EDINBURGH

Wednesday, April 10th—Royal (Dick) School of Veterinary Studies

10.15 a.m. Small-Animals Committee.

2.15 p.m. Home Appointments Committee.

4.00 p.m. Farm Live-stock Committee.

Thursday, April 11th—Royal (Dick) School of Veterinary Studies

10.00 a.m. Veterinary State Medicine Committee.

11.30 p.m. Parliamentary and Public Relations Committee.

2.15 p.m. General Purposes and Finance Committee.

Friday, April 12th—Royal (Dick) School of Veterinary Studies

10.15 a.m. Council Meeting.

FOOT-AND-MOUTH DISEASE

The area described in the schedule below shall cease to be an Infected Area for the purpose of preventing the spread of foot-and-mouth disease on February 20th, 1957:—

IN THE COUNTY OF SOUTHAMPTON (HAMPSHIRE)

The City of Winchester.

In the Petty Sessional Division of Kingsclere: So much of the parishes of Whitchurch, Laverstoke and Overton as lies to the south of the road running from Hurstbourne Priors *via* Whitchurch and Overton to North Waltham excluding the said road.

In the Petty Sessional Division of Basingstoke: The parishes of Woodmancote and Popham and so much of the parishes of Steventon and North Waltham as lies to the south and west of the road running from Overton *via* North Waltham to Preston Candover excluding the said road.

In the Petty Sessional Division of Alresford: The parishes of Candovers and Northington and so much of the parish of Itchen Stoke and Ovington as lies to the north and west of the main road (A.31) running from Winchester to New Alresford including the said road.

In the Petty Sessional Division of Winchester: The parishes of Micheldever, Wonston, Kings Worthy, Abbotts Barton and Headbourne Worthy and so much of the parishes of Itchen Valley and Chilcomb as lies to the north of the main road (A.31) running from New Alresford to Winchester including the said road.

In the Petty Sessional Division of Andover: The parish of Bullington and so much of the parishes of Hurstbourne Priors, Longparish and Barton Stacey as lies to the east of the road running from Whitchurch *via* Hurstbourne Priors, Longparish and Barton Stacey to Crawley excluding the said road.

The area described in the schedule below shall cease to be an Infected Area for the purpose of preventing the spread of foot-and-mouth disease on February 23rd, 1957:—

IN THE COUNTY OF EAST SUFFOLK

The Borough of Beccles.

In the Petty Sessional Division of Mutford and Lothingland: The parishes of Barnby, Carlton Colville, Mutford, Gisleham, Rushmere and Kessingland.

In the Petty Sessional Division of Beccles: The parishes of Barsham, Worlingham, North Cove, Ringsfield, Weston, Ellough, Redisham, Willingham, Shadingfield and Sotterley.

In the Petty Sessional Division of Bungay: The parishes of Ilketshall St. Andrew and Ilketshall St. Lawrence.

In the Petty Sessional Division of Blything: The parishes of Henstead, Benacre, Wrentham, Brampton, Stoven, Spexhall, Westhall, Uggeshall, Frostenden, Covehithe, South Cove, Holton, Sotherton, Wangford, Blyford, Henham, Reydon and Easton Bavents.

ADDRESSES OF DISEASE INFECTED PREMISES

The list given below indicates, first the county in which are situated the premises on which disease has been confirmed, followed by the postal address and date of outbreak

Anthrax

Ches. Well House Farm, Handley, Tattenhall (Feb. 6).

Cumberland. Abbey Flatts Farm, Calderbridge (Feb. 7).

Hants. Beacon Cottage, Meonstoke, Southampton (Feb. 5); Garston Farm, East Meon, Petersfield (Feb. 6).

Nairn. Sandown Farm, Nairn (Feb. 4).

Somerset. Appledore, Lympsham, Weston-super-Mare (Feb. 5).

Staffs. Brough Hall, Gnosall (Feb. 6).

Fowl Pest

Essex. Hill Farm, Burnham-on-Crouch (Feb. 5).

Lancs. Barnes Lane Farm, Goosnargh (Feb. 5); Cowlee Farm, Bolton Road, West Houghton, Bolton; 176, Bolton Road, West Houghton (Feb. 5); Blackhorse Cottages,

Town Lane, Much Hoole; Rydal, Lancastor Road, Pilling, Preston; Bridge Cottage, St. Michaels; Braids Farm, Freckleton; Knoll Lane, Little Hoole, Preston (Feb. 7).

Northants. Green Farm, Staverton, Daventry (Feb. 5); Staverton Road, Daventry (Feb. 7).

Yorks. Manor Farm, Milby, Boroughbridge (Feb. 4); Four Alls Farm, Milby, Boroughbridge (Feb. 5).

Swine Fever

Berks. The Smallholding, Poplar Lane, Winnersh, Wokingham (Feb. 5).

Bucks. Winchmore Hill Farm (also known as Hollymount Farm, Winchmore Hill, Amersham (Feb. 5).

Derby. Bellington Farm, Thulston (Feb. 11).

Devon. Devon Mushroom Farm, Alfington, Ottery St. Mary (Feb. 11).

Hants. Vernon House, Meonstoke, Southampton (Feb. 5); Quarry Farm, Liss (Feb. 7).

Lincs. Bleak House Farm, Wingland, Sutton Bridge, Spalding (Feb. 5).

Northants. Rectory Farm, Daventry (Feb. 8).

Oxford. Hollis Hill Farm, Moreton-in-the-Marsh (Feb. 6).

Somerset. Withial Farm, East Pennard, Shepton Mallet (Feb. 7).

Surrey. Home Farm, Warlingham Park Hospital, Chelsham, Warlingham (Feb. 11).

Sussex. Gate House Farm, Gate House Lane, Rogate, Petersfield (Feb. 7).

Worcs. 23, Doctors Hill, Bourn Heath, Bromsgrove (Feb. 5).

Yorks Orchard House, Aughton, Sheffield (Feb. 6); South View, South Town, Belton, Doncaster (Feb. 8); Stillmeadow Farm, Thirtleby, Coniston, Hull (Feb. 8).

CORRESPONDENCE

The views expressed in letters addressed to the Editor represent the personal opinions of the writer only and their publication does not imply endorsement by the B.V.A.

Antibiotic Feeding and the Development of Resistant Strains

Sir,—The paper by Dr. H. Williams Smith and Mr. W. E. Crabb in your issue of January 12th is of interest and importance to all who are concerned with the use of antibiotics in animal feeding-stuffs. It would, however, do an injustice to the very able work reported in that paper to take the results out of their context or to draw conclusions that should await the outcome of other and further studies. The whole subject of antibiotic feeding and the development of resistant strains of micro-organisms has, regrettably, led to heated and often biased controversy. From the standpoint of animal production the primary considerations are economic ones, and the significance of the development of the changes reported by Williams Smith and Crabb must be assessed in terms of the long-term efficiency of production including, of course, the overall incidence of disease in stock on farms where antibiotic supplementation is practised. The ability or otherwise of tetracycline-fed animals to respond to antibiotic therapy may be assessed economically only if taken into consideration with disease-incidence and productive efficiency as a whole.

Williams Smith and Crabb leave us in little doubt that the continued feeding of tetracyclines leads, within a matter of weeks, to the development of a *Bacterium coli* flora of the intestinal tract that is predominantly tetracycline-resistant, that—in pigs at least—this change may occur in other stock on the same premises, and that—again in pigs—the condition may persist for long periods of time after tetracycline feeding has been discontinued. What we have yet to learn, however, is the relative pathogenicity of the sensitive and resistant strains. It would appear that the resistant *Bact. coli* are not strains that have changed through exposure to the drugs. "The evidence, in fact, indicates that the tetracyclines had gradually suppressed the multiplication of the large numbers of sensitive *Bact. coli* present before tetracycline feeding was commenced thus permitting resistant *Bact. coli* already present in the herd in very small numbers to occupy the position previously occupied by the sensitive strains." So far as I am aware there is as yet no evidence from any source to indicate that the degree of sensitivity to an antibiotic has any relationship to pathogenicity. Manufacturers of antibiotics would point out that, in virtually all the controlled trials they have sponsored, the use of active supplements has led to improvement in the health and productive efficiency of stock, as measured over periods up to some years. They would be able to show further an impressive amount of data to support the contention that the incidence of scouring is reduced in supplemented as opposed to control animals, and would suggest, therefore, that whatever the alternation in the intestinal flora, it is one that, in the vast majority of instances, would seem to be favourable to the host. There are records of farms on which tetracyclines have been fed for periods of up to at least three years without any evidence of scouring or other conditions associated with *Bact. coli*, and on the basis of this practical evidence a very serious challenge would be offered to that section of the Williams Smith & Crabb paper entitled "The presence of intestinal disease amongst pigs fed diets containing tetracyclines" and the relevant parts of the discussion. This particular section—in contrast to the remainder of their paper—dealt of necessity with some random and uncontrolled observations and it would be unfortunate if evidence of this kind could not be followed up by very much more extensive investigations before an attempt were made to assess its real significance.

The comprehensive summary of experimental work carried out in Great Britain on antibiotics as growth promoters in pigs, presented by Dr. R. Braude at the European Symposium last year, must have included many favourable records obtained with stock which, on the basis of the work conducted by Williams Smith and Crabb, would have shown a preponderance of resistant strains. Dr. K. L. Robinson wrote in *The Agricultural Review* in June, 1955, that "In the United States antibiotics have . . . been fed to millions of animals during the past five years, and current American opinion appears to be that, if the development of resistant strains was a real risk, the evidence by this time would have

been overwhelming." It might now seem that emergence of resistant strains occurs but that there is as yet no widespread evidence of its being a practical drawback to increased production.

It is hoped that the authors—and others—will find it possible to continue these important studies and thereby indicate the true pathogenic significance of the increased proportion of resistant organisms that follow from antibiotic feeding. The passing reference on page 30 to the possible effect on persons coming into contact with tetracycline-fed pigs raises a separate but equally important issue and here again it is to be hoped that relevant investigations may be made.

Yours faithfully,
ALASTAIR N. WORDEN.

Cromwell House,
Huntingdon.

February 5th, 1957.

Professional Salaries

Sir,—I find myself in agreement with Mr. R. H. F. Palmer when he states, in your issue of February 2nd, that " the status of a profession in the eyes of the public is profoundly affected by the salaries it can command."

In this country the largest single employer of veterinarians is the Ministry of Agriculture, Fisheries and Food. The salaries offered by other bodies are also influenced by those of the state veterinary service. It is, therefore, doubly unfortunate that, as a result of the report of the Royal Commission on the Civil Service, the Ministry has introduced salary scales which have resulted in a decrease of salary for many of those in the basic grade, namely Veterinary Officers, Assistant Veterinary Investigation Officers, and Research Officers.

Yours faithfully,
E. A. GIBSON.

18, Stretten Avenue,
Cambridge.

February 7th, 1957.

Decomposition of Pathological Specimens

Sir,—The communication from the Animal Health Trust Canine Research Station in your issue of February 2nd presents useful information on measures to be taken to ameliorate the decomposition of pathological specimens.

As the writers stated, their requirements are mainly concerned with the isolation of causal organisms and the observation of cellular morphology. It may, therefore, be appropriate at this time to draw attention to an additional requirement when information on pathological patterns and macroscopic changes is needed. The classic work of Trueta, Barclay, Daniel, Franklin, and Pritchard on the shunt mechanism of the renal circulation (Oxford: Blackwell Scientific Publications, 1947) showed that vascular patterns are changeable. The radiologist of that research team, the late Dr. A. E. Barclay, has stressed in his volume *Micro-arteriography* (Oxford: Blackwell Scientific Publications, 1951) the essential need for a detailed clinical history of the conditions of " killing " to accompany each specimen, so that the vascular pattern may be related to function. He instanced a rabbit kidney, received by him as " normal "; but the conditions under which the rabbit was killed or died were unknown, and the vascular pattern may well have been altered by trauma or shock. It is believed that such changes do not occur after the nervous control has been severed.

That such profound changes in morphology remained undemonstrated until 1947 must make us all very much aware of the need for exactness when describing the conditions of death.

Yours faithfully,
DONALD LEATHERDALE.

Eastfield Lodge,
Whitchurch,
Nr. Pangbourne,
Berks.

February 6th, 1957.

Public Relations and the Export of Live Cattle to the Continent

Sir,—The export of cattle has, for some time, been a daily topic of most British newspapers, and the regular allegations of ill treatment of cattle during shipment makes such articles of high news value. Questioners in the House of Commons ask the Minister of Agriculture whether he is aware of the " public anxiety " concerning the export of live cattle. " Public anxiety " is quoted on several occasions as a basis of questions on this matter. Yet how much can the public really know about the treatment of cattle during transit? Opinions expressed by interested parties in animal welfare circles can sway public opinion, *via* the press, with extraordinary speed and effect. It requires only the whisper of a rumour of a possible case of ill treatment to an animal, to make the average Briton charge with unthinking ferocity in the direction of the trouble. The remarkable fact is that the selfsame person, so proud of his kindness to animals, is only too willing to believe allegations of brutality in others. It is, therefore, easy for cranks and self-styled " animal lovers " to whip up public opinion simply by alleging ill treatment.

As our profession is deeply interested in the welfare of animals in the export trade, we think that it is time some attempt was made to put a sensible, moderate, and expert view of the situation before the public. There must be, at this moment, many veterinary surgeons actively engaged in this live-stock export business, and we think that their opinions should be made known without delay to refute or substantiate the allegations of ill treatment and to ease the " public anxiety." We cannot hope to match the success of the non-veterinary public whose power and influence have won for them a Government enquiry. Their success is the result of hard work, active and intelligent public relations, and the energetic pursuit of their beliefs. The fact that a well-known veterinary surgeon has been appointed to the Committee of Enquiry, does not alter the fact that we now tag along behind welfare societies when we should be taking the lead.

According to *The Times*, the deliberations of this Committee will not be available for three months. We suggest, Sir, that the B.V.A. should do all in its power, meanwhile, to collect information from veterinary surgeons engaged in the export trade and, perhaps, also to send a few of our members to accompany cattle in transit with the express duty of reporting back. If an interim report could not be made, it might be possible for the observations of these veterinary surgeons to be used as evidence at the meetings of the Committee of Enquiry.

Yours faithfully,
A. K. KIRKWOOD,
I. C. MEIKLE.

14 and 16, Queen's Road,
Reading.
February 12th, 1957.

[While not disputing the principle involved, it may be suggested that comparisons between the Association's public activities and those of animal welfare societies can be misleading. The largest societies dispose incomes many times the size of ours, and quite properly spend this money in pursuit of their declared aims. Similarly, the societies' permanent staffs vastly exceed that of the B.V.A.—*Editor.*]

Horses and Steam Traction

Sir,—While I quite appreciate that it is 50 years too late for the point to be of real practical importance, I am wondering whether some of our members, who have had more experience with horses than we younger ones are ever likely to get, would care to comment on a matter which has been puzzling me for some time—the violent reactions of most otherwise docile horses when confronted with any form of steam vehicle.

In the early days of mechanical transport, horses were unaccustomed to meeting other than their own kind, and anyway the early traction engines had flashing motion and large spinning flywheels nicely set at a horse's eye-level. These combined with a leaky gland or two and the heavy exhaust beat of an old "single" were sufficient to strike terror into less-susceptible hearts than those of equines; but to-day the position is very different.

Horses used in delivery vans, and even farm horses, are left quite unmoved by modern traffic passing within inches of them at speeds in excess of 40 m.p.h. A modern steam lorry with totally enclosed four-cylinder engine is so similar to its diesel counterpart in appearance that the general public does not notice the difference, and is considerably less noisy. Nevertheless, your hitherto docile milk cob will spot it 100 yards away and be up on his hind legs in protest.

A quiet and fairly elderly saddle horse with an experienced rider was observed recently refusing stubbornly to proceed along the road. A convoy of overloaded lorries was passing with much changing of gears, making so much noise that one could not converse. This did not bother the horse at all, it was the 40-year-old steam roller standing quietly at the roadside sucking a drop of water out of the brook that the horse refused to pass. Yet the roller was stationary and quiet, with no steam escaping.

The most extreme case known to the writer concerned New Forest ponies, who are renowned for their almost suicidal disregard of modern traffic, yet a group of them bolted for miles to keep ahead of a steam tractor which was on tow to a petrol vehicle and had not held fire for seven years. It can only be assumed that it was the rattle of the gearing which upset them in this case.

The problem is all the more intriguing as several cases come to mind of tar-pot horses and others whose work was associated with engines, which, when left loose at meal-times would actively seek the proximity of the engine, and even rest their nose-bags thereon, apparently liking the radiated warmth.

It would be interesting to establish just what factor it is which causes this apparent fear in the horse, for then one might be able to do something to mitigate it. Noise may be the prime cause in some cases, but not in my first example, which also discredits a "strange" appearance. Escaping steam will upset almost any horse, but preventing this does not entirely solve the problem. Could it be that the smell of fire, even when the fire is enclosed and the smell masked with hot oil, exerts some effect on primitive survival instincts?

If the rationing of fuel oil gets really serious, the point might yet regain practical importance, but meanwhile I wish I knew!

Yours faithfully,
W. MICHAEL SALMON.

Sunnyhaven,
Howey,
Llandrindod Wells,
Radnor.

February 6th, 1957.

Acid Firing

Sir,—In the recent correspondence appearing in your journal on the subject of acid firing, I am surprised that no mention has been made of the blister bandage as a painless and efficient substitute for firing, both by hot iron and acid, in the treatment of sprained and thickened tendons and ligaments, and recent exostosis. The method, I think, was first brought to public notice by the late Professor James McQueen, F.R.C.V.S., some 50 years ago, and its application by me, as an assistant in a large horse practice of those days, gave me most gratifying results, and soon the hot iron and all the cruelty and non-ethical practice its use entailed was dispensed with altogether. The blister bandage, as its name implies, consists of the application of a 1-8 biniodide of mercury ointment well rubbed into the affected part and a surgical (or other) bandage applied with some pressure over a thick layer of cotton wool covering the whole region. Usually the animal shows little pain and only slight inconvenience, but as a precaution the head is tied up for 12 to 24 hours before the horse is turned loose in a box.

The bandage is removed in a fortnight's time, when

it is found that the serum from the blistered skin has soaked into the cotton wool and dried into a hard mass, much in the manner of a plaster bandage. The action of the blister, plus the pressure and support of the bandage and the rest of the limb which it supplies all combine towards the rapid repair of inflamed and swollen parts and even the absorption of recently formed exostosis.

When the bandage is removed, the old skin comes away with it in the form of a coat, leaving the new skin finely covered with rapidly growing hair.

Soon the part regains its normal appearance with none of the unsightly scars or blemish, so reminiscent of the practices of a cruel and barbarous age.

Yours faithfully,
W. W. HENDERSON.

Lymington,
Hants.

February 8th, 1957.

Sir,—It is obvious from Mr. E. F. Beckett's letter in THE VETERINARY RECORD of February 9th, that he remains unconverted to the use of perforated plaster in acid firing, although he does agree that the operation is useful in the treatment of sprained tendons, etc.

When I adopted the method I had no thought of impressing clients but must admit that it has that effect on many people who looked on the old method of firing with a cork as somewhat crude, and appreciate the use of a more scientific looking instrument and the neat appearance of the resulting firing marks, due to the use of plaster.

If Mr. Beckett had read the details of the use of sleek, he would know that the dimensions of the leg make no difference as one uses small apertures closer together for fine tendons and larger ones spaced further apart for coarse tendons.

My remark that one should endeavour to keep the opposite fore leg held up throughout the operation in order to prevent the horse flexing the leg to be fired, and in doing so cause the sleek to ruck up, was meant as a precautionary warning. In fact I have had only one case in which this occurred and then it was of minor importance.

As Mr. Beckett refuses to be converted to this procedure we must go our separate ways, he with his cork and me with my steam hammer, unless, of course, we should have the mutual pleasure of that "long horse gossip," and then, who knows?

Yours faithfully,
E. S. W. PEATT.

The Lilacs,
Summer Hill,
Ashford,
Kent.

February 10th, 1957.

Sir,—It seems a pity that Brigadier Peatt should be rebuked for explaining the details of his precise technique of acid firing, a treatment that in careless hands can lead to ugly blemishes. If those gentlemen who use sulphuric acid less carefully maintain that their results are just as good, then I would still support Brigadier Peatt for his desire to produce a neat as well as an effective method.

May I plead for a less-partisan approach to the question of the treatment of strained tendons? While I have been convinced for many years that actual cautery is the most effective treatment for severe breakdown and is necessary for such cases if they are required to run in steeplechases, as many of them do for years after being fired, there are other less-drastic treatments from which a choice may be made according to the cause and severity of the original injury and the owner's ambitions, carefully "vetted," for his animal's future.

A horse whose tendons are strained on account of his faulty conformation is not likely to stand up to racing and should probably be classed as incurable. For those injured in accidents and for the great majority whose strains are attributable to deviations from exact co-ordination due to tiredness, treatments fall into two groups both affecting the inflammatory process which follows the strain. One group of treatments aims at eliminating the inflammation. In this group fall tight bandaging, cold water, the cooling lotions, and the sulphate leg pastes, the best of all being the barium sulphide and fuller's earth application for the introduction of which we are indebted to Mr. T. N. Gold, though he modestly hesitates to give us the results of his long experience with these substances. In the other group fall hot water, diathermy, and the liniments, blisters, acids, and firing irons, all being intended to increase or repeat the inflammatory reaction and so bring about a more thorough repair.

The more drastic the treatment the more severe will be the inflammation and the longer will the animal require to be rested while the reaction resolves completely. In order to return the horse to its normal work it is obviously of advantage to choose the method of treatment most likely to effect a satisfactory cure in the least time. Actual cautery will not be chosen lightly as this requires the longest time for recovery. The recovery period, not only from firing but from any state of inflammation, may be markedly curtailed by electrical stimulation of the leg muscles by faradism, which has the effect of preventing any circulatory stagnation, and I hope, before long, to be able to publish a series of cases treated in this way, not in competition with Brigadier Peatt, but, like him, to present in some detail a method of treatment and its results.

Yours faithfully,
A. C. FRASER.

Woodside,
Chestnut Avenue,
Wokingham, Berks.

February 10th, 1957.

ADVERTISER'S ANNOUNCEMENT

BURROUGHS WELLCOME & CO. announce that "Wellcome" brand Leptospira Icterohaemorrhagiae Vaccine is now issued solely in containers of 3 c.c. This pack contains sufficient vaccine for the recommended immunising course for a dog or fox.